

KCS TraceME TM-1025 / R10K3

Iridium enabled / GPS / LTE-M / NB-IoT / RF module



The TM-1025 / R10K3 is a high-end product line member of KCS' advanced TraceME track and trace modules. The TM-1025 is targeted for remotely tracing and controlling vehicles, vessels and other powered equipment and machinery.

The TM-1025 is equipped with an intelligent location based positioning solution, which provides locating the vehicle or object quickly and accurate in scenarios where traditional GPS systems are insufficient. It offers multiple connectivity options and server connections.

Key Features

- National telecom & worldwide satellite (GPS / Iridium) coverage
 - Quad-band GSM/GPRS
 - UMTS/HSPA (*)
 - LTE Cat M1 / NB-1 / EGPRS (*)
 - LTE Cat M1 / NB-2 / EGPRS (*)
 - GPS
 - Iridium enabled (**)
- Nano SIM socket
- SIM on chip (*)
- Very small, only 74 x 30 x 11 mm.
- Lightweight: 24 grams for the fully equipped PCB.
- BASIC I/O, Serial, analog and digital interfaces
- Ultra low power consumption, down to 12uA.
- 10 to 31VDC power supply
- Internal GPS antenna.
- Integrated 2.45 GHz radio for special functions and peripherals
 - Long range, over 1 km range, line of sight
 - Internal or external antenna
- LoRa technology (*)
 - EU-868MHz
 - Up to 60km line of sight at 25mW and with integrated antenna.
- Portable type: Integrated antennas.
- External micro coax antennas for GSM, LoRa and 2.4GHz RF (*)
- Li-ion charger/switcher system seamlessly feeds all parts from external power source or Li-ion battery.
- Onboard sensors:
 - Temperature sensor (±0.5°C)
 - 3D accelerometer (up to 16g)
- Optional sensors (*)
 - Humidity sensor (±2%RH)
 - Baro-/Altitude meter (±10cm)
 - Compass/3D Magnetometer
- Wide operating temperature range: -20° ... +70°C (without LiPo battery)
- Robust IP67 housing (*)
- Microphone internal or external.
- 3 RGB LEDs and 2 switches for user interaction.
- Extension connector for LEDs and switches.
- Multiple watchdog levels for maximum stability.
- Dual charge protection for voltages and temperature range.
- Event based free configurable module to fit any job; 300+ different events, up to 4,000 geozones.
- Remote maintenance. Both firmware and configuration files can be updated over the air.
- Runs local user scripts via .src files.
- User definable SMS commands.
- Supports integration into third party networks.

(*) Optional, please contact sales for more details.

(**) Iridium enabled. The module contains an extension connector for connecting Iridium satellite module.

Applications

- Vehicle and vessel tracking
- Object protection and tracking
- Logistics, M2M
- Security and surveillance
- Remote control and diagnostics
- Anti-theft
- Asset monitoring

Product Summary

Equipped with a GPS receiver, the TM-1025 / R10K3 module provides reliable and accurate navigational data. Advanced location-based positioning (LSB) by proprietary RF enables positioning inside buildings and offers special power saving features for a variety of applications.

The module can be equipped with different optional technologies for traceability (e.g. 2G, 3G or 4G (LTE Cat-M1 and NB-IoT) modem, GPS, Iridium (**), LoRa, Bluetooth Smart (BLE), iBeacon and proprietary RF, acceleration-, temperature-, altitude- and humidity sensor, compass and external sensor interfacing). The module can be fully customized dependent of the application, offering easy integration with existing wireless networks and specific custom mobile App's on smartphones and tablets.

The module provides reliable, optimized connectivity and coverage for the next generation LTE-M and NB-IoT networks and offers seamless fall back to 2G networks. In areas without network coverage, position-data and events are stored in memory (up to 250,000 positions). As soon as communication is restored, all information can be transmitted.

The combined LoRa and 2.4GHz RF technologies offers tracing of the module over a wide area up to 10km. The rough tracing from 10km down to 300 meters is done by LoRa, while the short-range tracing is done by the proprietary RF-technique, which offers excellent indoor and outdoor tracing with an accuracy up to 1.5 meters.

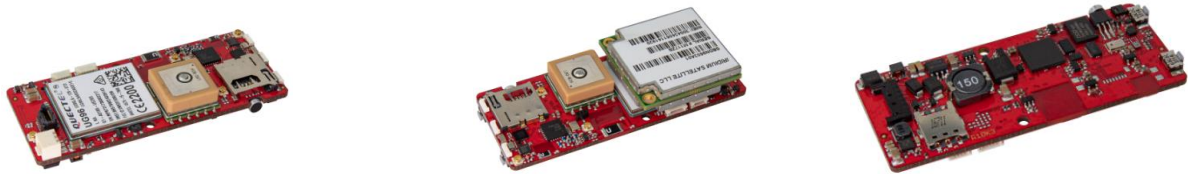
The functionality of the module can be remotely programmed to fit any job. From basic/general functionality to advanced/low-level application specific detailed functionality.

All of the necessary server-side scripts to process and store data from these units are available for registered distributors and resellers. If you do not want to host data and maps yourself, you can use the hosting services of one of our partner companies.

(**) Iridium enabled. The module contains an extension connector for connecting Iridium satellite module.

Ordering information

The KCS TraceME TM-1025 / R10K3 can be equipped with different optional technologies for traceability. It can be fully customized dependent of the application. Please contact sales for more details.





Enclosure (*)

Depending on the application, different types of enclosures might be required, which can be provided separately.

Specifications KCS TraceME TM-1025


Data communication

GPRS Modem	Quectel UG96 UMTS/HSPA Module, optional M95 QUAD band, optional UG95(-A or -E) UMTS/HSPA Module, optional BG95 NB-IoT Module, optional BG96 LTE-M / NB-IoT Module, all global certifications and R&TTE directives.	
Frequency bands	GSM/GPRS: 850/900/1800/1900 MHz UMTS: 800/850/900/1900/2100 MHz LTE: B1-5, 8, 12, 13,18, 19, 20, 25, 28	


LoRa	Semtech SX1272 transceiver	
Frequency	EU-868MHz	
Protocol	LoRaWAN 1.0.2 and custom LoRa protocol	
Transmitting power	up to +20 dBm	
Sensitivity	-137 dBm	

Iridium	Extension connector for Iridium 9603 SBD modem	
Frequency	1616 to 1626.5 MHz	
Sensitivity	-117 dBm	

RF Communication

RF 2.4GHz.	Nordic nRF51822	
Frequency	2.45 GHz.	
Protocol	BLE 4.0 and custom 2.4 GHz. protocol	
Transmitting power	up to +20 dBm (with on-board amplifier)	
Sensitivity	-93 dBm (BLE)	

Navigation

GPS Receiver	Quectel L80 GPS 	
Frequency	GPS L1 Band Receiver (1575.42MHz)/ Channel: 22 (Tracking)/ 66 (Acquisition) C/A Code SBAS: WAAS, EGNOS, MSAS, GAGAN	
Sensitivity	Acquisition	-148 dBm (typical)
	Reacquisition	-160 dBm (typical)
	Tracking	-165 dBm (typical)
Horizontal Position Accuracy	<2.5 m CEP	

Operating temperature conditions

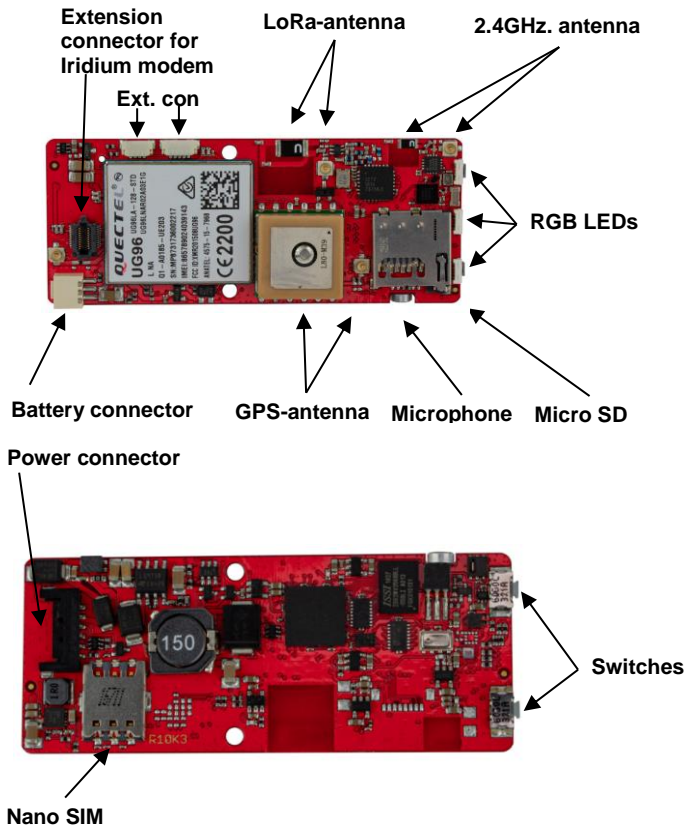
With rechargeable LiPo Cell	-20°C ... +60°C (discharging) 0°C ... +45°C (charging)
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(**) Extended temperature range LiPo batteries available on request.

Electrical

Power supply	Maximum range: +10...+31VDC
Charging Current	Max 450mA. Observing 0...+45°C safety range for LiPolymer. Higher charging currents (for batteries with higher capacity) on request.
Power Consumption	60 µW standby (typical): GPS off, hot start possible. GSM off. Processor monitors timer + acceleration sensor + I/O, watchdog on, brownout detection on.
	Power per fix: < 1.3 mAh, including cold start of GPS, GSM power-up and transmission via GPRS or SMS.
	150 mW tracking: GPS always on, GPRS active, GPRS session open.
	Power consumption depends on amount of GPRS traffic and navigation parameters.

External connections

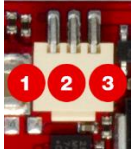


Power and I/O-connector



Pin	Signal	Type	Description
1	VCC	VCC	+10 to +31VDC charge input and power supply
2	GND	GND	Ground for VCC
3	5VDC	VCC	External 5VDC
4	Serial IN	I	Serial input or digital input (2..31V for active high) ~ 50k pulldown
5	Serial OUT	O	Serial or digital output, open collector (max 31V/10mA/100mW)
6	GND	GND	Ground for IO

Battery connector



Pin	Description
1	Temperature sensor
2	Ground
3	3.4 - 4.5V Battery (+) connection

Extension connector



Pin	Signal	Type	Description
1	PWR-OUT	0	+4.2VDC power output for external sensors
2	Serial IN	I	Serial input or digital input (2..31V for active high) ~ 50k pulldown
3	Serial OUT	0	Serial or digital output, open collector (max 31V/10mA/100mW)
4	Analog IN	I	Analog input (0...+1.2V), or digital I/O (0... +3V)
5	GND	GND	GND for charge and I/O

Connector manufacturer: JST
 Partnumber PCB connector: SM05B-SURS-TF(LF)(SN)
 Partnumber cable connector: 05SUR-32S
 Partnumber crimp contact: SSUH-003T-P0.15

Extension connector



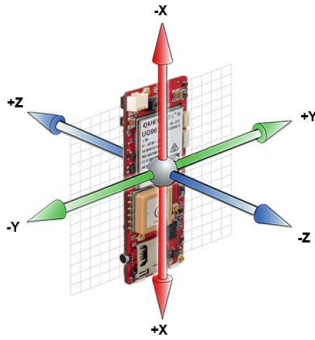
This extension connector can be used to connect another TraceME module (e.g. TM-902/N1C2)

Pin	Signal	Type	Description
1	PWR-OUT	0	+4.2VDC power output for external sensors
2	Serial IN	I	Serial input or digital input (2..31V for active high) ~ 50k pulldown
3	Serial OUT	0	Serial or digital output, open collector (max 31V/10mA/100mW)
4	GND	GND	GND for charge and I/O

Connector manufacturer: JST
 Partnumber PCB connector: SM04B-SURS-TF(LF)(SN)
 Partnumber cable connector: 04SUR-32S
 Partnumber crimp contact: SSUH-003T-P0.15

Onboard sensors

3D accelerometer



The module contains an 3D accelerometer (up to 16g), which can be used for a variety of custom specific (M2M) applications. Accelerometers are useful for measuring movement, speed, g-forces and vibration of the object. The accelerometer and advanced embedded firmware enables a very low-power battery solution.

About KCS BV

KCS BV, founded in The Netherlands in 1984, develops and manufactures electronics in-house for industrial applications, medical purposes, broad-casting solutions, etc.

KCS is ISO 9001:2015 and ISO 14001:2015 certified.



LoRa Alliance Member™

KCS is a LoRa Alliance member since 2016.

Support

Visit our support page at: www.trace.me

Sales

Contact us by email: Trade@trace.me

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